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U. S. DEPARTMENT OF AGRICULTURE

FEDERAL - STATE COOPERATIVE

SNOW SURVEYS and
WATER SUPPLY FORECASTS

for

Colorado, Rio Grande, Platte, and
Arkansas Drainage Basins

UNITED STATES DEPARTMENT of AGRICULTURE--SOIL CONSERVATION SERVICE.

and

COLORADO AGRICULTURAL EXPERIMENT STATION and
STATE ENGINEER of NEW MEXICO

Data included in this report were obtained by the agencies named above
in cooperation with the U. S. Forest Service, National Park Service,
Bureau of Reclamation, State Engineers of Colorado and Wyoming; and
other Federal, State and local organizations.

AS OF
MAR. 1, 1957

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

TO RECIPIENTS OF COOPERATIVE SNOW SURVEY
AND WATER SUPPLY FORECAST REPORTS:

Snow surveys in the West are conducted each year at more than 1200 snow courses. Basin and Province or State snow survey reports summarizing the results of the measurements and forecasts of seasonal runoff and water supply are issued by the soil Conservation Service, U. S. Department of Agriculture and some of its co-operators; the Water Rights Branch of the British Columbia Department of Lands and Forests; and the California Division of Water Resources.

Copies of the various federal-state cooperative snow survey reports listed below may be secured by writing to:

Head, Water Supply Forecasting Section
Soil Conservation Service
209 S. W. 5th Avenue
Portland 4, Oregon

BASIN REPORTS:

Colorado, Rio Grande Issued monthly February through May by SCS and
and Platte-Arkansas Colorado Experiment Station, Fort Collins, Colorado.*
River Basins

Columbia River Issued monthly January through May by Soil Conserva-
Basin tion Service, Boise, Idaho.*

Upper Missouri Issued monthly February through May by SCS and
River Basin Montana Agricultural Experiment Station, Bozeman,
Montana.*

West-Wide Water Issued April 1 by Soil Conservation Service and
Supply Outlook Cooperators, Portland, Oregon.

STATE REPORTS:

Arizona Issued semi-monthly January 15 through April 1 by SCS
and Salt River Valley Water Users Association, Phoenix,
Arizona.*

Nevada Issued monthly February through April by SCS and
Nevada State Engineer, Reno, Nevada.*

Oregon Issued monthly January through May by SCS, Portland,
Oregon, and Oregon Agricultural Experiment Station.*

Utah Issued monthly January through May by SCS, Salt Lake
City, Utah, and State Engineer of Utah and Utah Agri-
cultural Experiment Station.*

Washington Issued monthly February through May by SCS, Spokane,
Washington, and State Department of Conservation and
Development.*

Wyoming Issued monthly February through May by SCS, Casper,
Wyoming, and State Engineer of Wyoming.*

*Special reports are issued as needed.

The British Columbia reports are issued February 1 through June 1 and may be
secured from Comptroller, Water Rights Branch, Department of Lands and Forests,
Parliament Buildings, Victoria, B. C.

The California reports are issued monthly February 1 through May 1 and may be
secured from Division of Water Resources, California Department of Public
Works, Sacramento, California.

The annual water supply forecasts of the Weather Bureau are available in monthly
bulletins published from January through May. These bulletins entitled, "Water
Supply Forecasts for the Western United States" may be obtained from River Fore-
cast Center, Weather Bureau, 712 Federal Office Building, Kansas City 6,
Missouri.

FEDERAL-STATE COOPERATIVE
SNOW SURVEYS AND WATER SUPPLY FORECASTS

for

COLORADO RIVER, PLATTE RIVER
ARKANSAS RIVER AND RIO GRANDE
DRAINAGE BASINS

Issued

March 8, 1957

Report Prepared By
Homer J. Stockwell, Snow Survey Supervisor
Fort Collins, Colorado
Jack N. Washichek, Assistant Snow Survey Supervisor
Fort Collins, Colorado

United States Department of Agriculture
Soil Conservation Service
and
Colorado Agricultural Experiment Station
Fort Collins, Colorado
and
State Engineer of Colorado
Denver, Colorado
and
State Engineer of New Mexico
Santa Fe, New Mexico

Issued By

Kenneth W. Chalmers
State Conservationist
Soil Conservation Service

J. E. Whitten
State Engineer
State of Colorado

Sherman S. Wheeler, Director
Colorado Agricultural
Experiment Station

S. E. Reynolds
State Engineer
State of New Mexico

General Series Paper No. 652
Colorado Agricultural Experiment Station

Snow Survey measurements in Wyoming, Utah, and Arizona are supplied by Snow Survey Supervisors in those states.

WATER SUPPLY OUTLOOK
COLORADO, PLATTE, ARKANSAS, RIO GRANDE
DRAINAGE BASINS
March 1, 1957

WATER SUPPLY OUTLOOK FOR COLORADO AND NEW MEXICO AS OF MARCH 1 CONTINUES TO BE IMPROVED OVER THE PAST FOUR YEARS IN MOST AREAS. SNOW PACK IS NORMAL OR ABOVE IN COLORADO. WATER SUPPLY SHOULD BE GENERALLY ADEQUATE ON THE WESTERN SLOPE. WATER SHORTAGES MAY BE EXPECTED FOR THE LOWER SOUTH PLATTE AND ARKANSAS VALLEYS BUT STREAMFLOW SHOULD BE SLIGHTLY ABOVE THAT FOR 1956. THE OUTLOOK ALONG THE RIO GRANDE IN COLORADO AND NEW MEXICO DECLINED DURING FEBRUARY WITH LIMITED SHORTAGES NOW EXPECTED FOR SAN LUIS VALLEY AND CONTINUED SEVERE SHORTAGE OF STREAMFLOW IN NEW MEXICO.

SURFACE WATER SUPPLY OUTLOOK FOR ARIZONA CONTINUES TO BE EXTREMELY POOR. PRACTICALLY ALL SNOW RECEIVED IN JANUARY HAS MELTED.

The water supply outlook for Colorado is improved generally over that for the 1956 season. Mountain snow pack declined in reference to average during February because of mild weather. Seasonal snow accumulation to date range from near normal on the Poudre, Big Thompson and Saint Vrain tributaries of the South Platte to 150 percent of normal on the headwaters of the Gunnison and some courses on the Upper Rio Grande. Seasonal runoff is not expected to be in line with present percentage of normal snow pack. Most important in the present outlook is dry mountain soils, lower water tables, and a series of drouth years which has reduced the summer flow to be expected from any given snow pack. With average snowfall for the remainder of the season and normal conditions during the runoff period, it is doubtful if the flow of any stream except the Yampa, White and Gunnison will exceed normal during the next season. Shortage may be expected on the Lower South Platte and Arkansas but the shortage should not be as severe as in 1956.

SOUTH PLATTE. Water supplies for irrigated areas near the mountains should be reasonably adequate for areas with the supplemental supply from the Colorado-Big Thompson project. Some shortage is expected along the Upper South Platte, Clear Creek, and South Boulder Creek. The water shortage along the South Platte from Kersey to Julesburg will most likely be similar to that which existed in 1956. Surface soil moisture is fair to good. Storage in irrigation reservoirs is below normal.

ARKANSAS. The snow pack to date on the Arkansas River and its southern tributaries is well above average but due to other conditions affecting the flow during 1957, less than normal runoff is still expected. Water supply should be adequate above Pueblo but mild to severe shortages of water will again occur through the main irrigated valley. Reservoir storage is again practically non-existent. Soil moisture conditions are poor. A much heavier snow pack along with adequate summer rainfall will be necessary to alleviate drouth conditions.

RIO GRANDE. The water supply outlook for the Rio Grande declined sharply during February particularly for the New Mexico section. Increases in snow water content were slight and only at the highest elevations. In Colorado, the snow pack as of March 1 ranges from normal to about 150 percent of normal, while in New Mexico most snow measurements were less than normal. The water supply outlook for San Luis valley is much better than for a year ago with forecasts of summer flow ranging near average. Summer flow through New Mexico is most likely to be a little over half of normal into the Middle Rio Grande areas and less than half of normal into Elephant Butte. As has happened in recent years, a large amount of the snow pack will be used to replace soil moisture and groundwater deficits. Reservoir storage in San Luis Valley is a small fraction of normal. El Vado is practically empty. Elephant Butte and Caballo reservoirs contain only about 10 percent of average carryover for March 1 and less than half of that of a year ago. The water supply outlook for the Carlsbad and Tucumcari projects is poor, principally due to lack of reservoir storage and drouth in irrigated areas.

COLORADO RIVER. If snow fall continues to be normal or above during the late winter and spring months, water supply should be generally adequate in Western Colorado. Some shortages will possibly occur on the area served by the Dolores River. Since snow fall has extended to lower elevations, soil moisture conditions are good and water supply along the small tributary streams should be better than for the past four years. Total summer flow will be near normal and may exceed normal on the Gunnison, Yampa and White Rivers. Snow pack as of March 1 ranges from 125 to 150 percent of normal. As with other watersheds, the estimate of summer flow is reduced because of dry mountain soils and a series of years of drouth. Reservoir storage on Colorado River tributaries is generally less than normal and a year ago.

Colorado River runoff into Lake Mead is expected to be near normal and substantially above that for the snow melt season of 1956.

NORTH PLATTE. The snow pack to March 1 is above normal on the North Platte. Snow at valley elevations has melted causing a definite increase in streamflow. Inflow to Seminole is expected to be near average. Storage in the four major reservoirs in Wyoming is down about 20 percent from a year ago and 75 percent of normal. The water supply outlook for areas along the North Platte in Eastern Wyoming and Western Nebraska is improving and is similar to that for 1956. Storage for the older North Platte project is limited to about 100,000 acre feet but inflow to the reservoirs should well exceed that of a year ago. Soil moisture in irrigated areas is deficient. For the Wheatland area of the Laramie River, the water supply will be near three-quarters of normal which indicates another year of water shortage.

ARIZONA. As of March 1, the snow in the mountains of Arizona has melted. Streamflow has been relatively low except on the Verde River which had a fair flow during February. Overall, the water supply outlook continues to be extremely poor. Storage on the Salt River and its tributaries is now a little over 450,000 acre-feet as compared to about 700,000 acre-feet a year ago and 750,000 acre-feet an average for the past 15 years. San Carlos reservoir is nearly empty and prospects for inflow are almost nil.

UTAH. The water supply outlook for Colorado River tributaries in Utah is relatively poor as of March 1. The snow pack is below normal and mountain soils are extremely dry. Unless snow pack is well above normal for the remainder of the season, shortage of irrigation water will occur.

STREAMFLOW FORECASTS

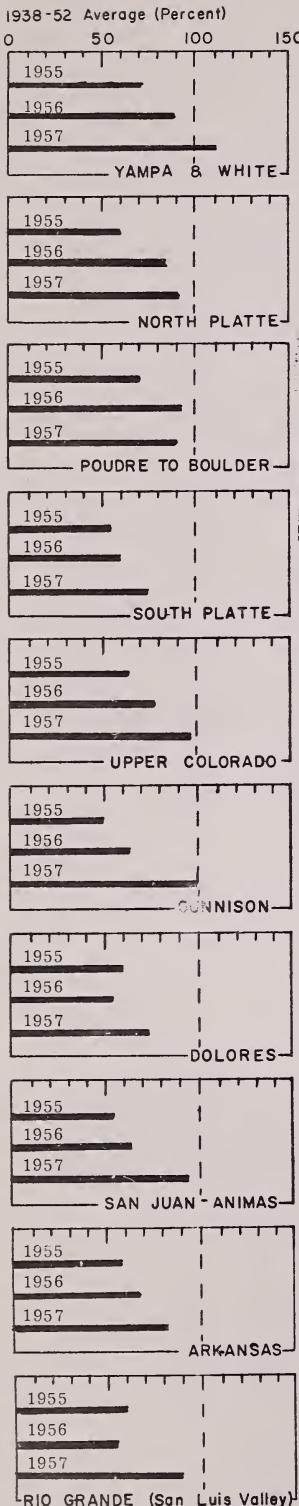
APRIL-SEPTEMBER INCLUSIVE

March 1, 1957

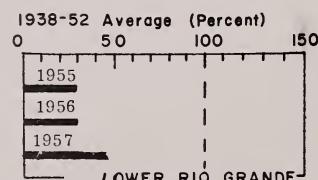
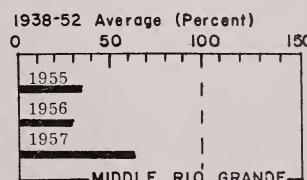
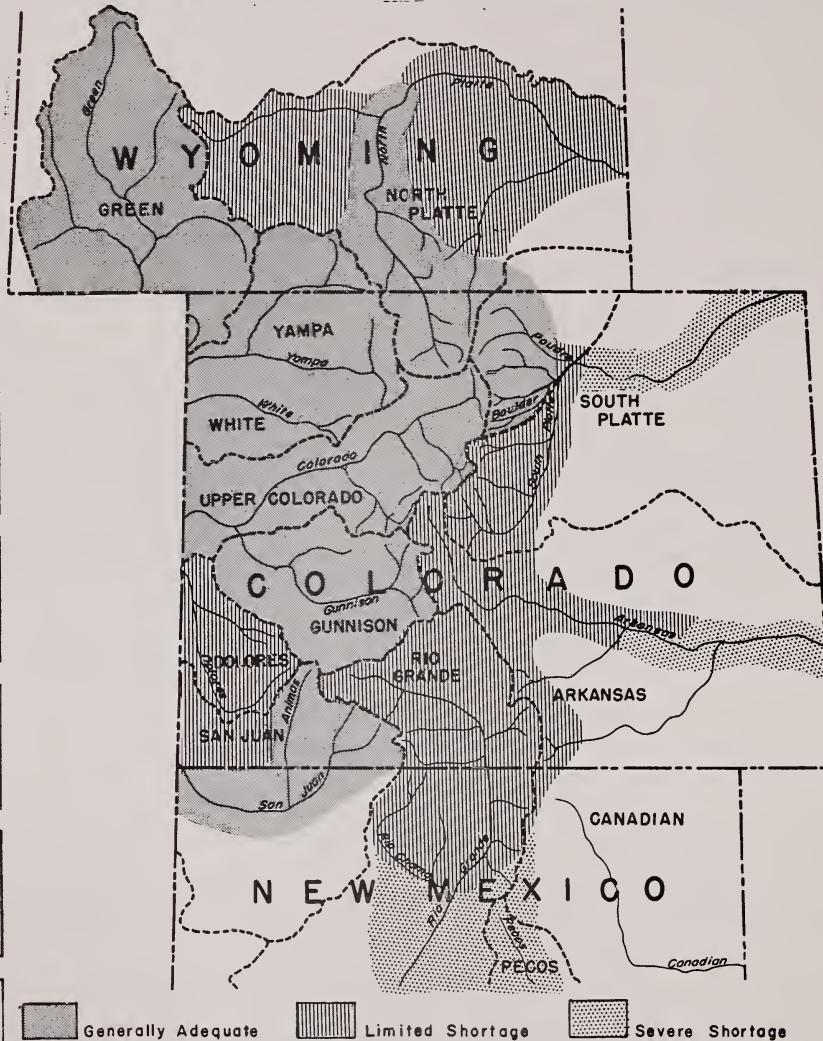
BASIN AND STREAM	Forecast 1000 AF	15-Yr. Avg. 1938-52		BASIN AND STREAM	Forecast 1000 AF	15-Yr. Avg. 1938-52	
		% Avg. 1938-52	Avg. 1938-52			% Avg. 1938-52	Avg. 1938-52
NORTH PLATTE							
Sweetwater at Alcova							
North Platte at Saratoga							
Medicine Bow near Hanna							
Laramie at Jelm	85*	105*	81*				
Laramie at Lookout							
SOUTH PLATTE							
Poudre at Canon	190*	220*	86*				
Big Thompson at Drake	90*	111*	81*				
Saint Vrain at Lyons	70	88	79				
Boulder at Orodell	45	55	82				
Clear Creek at Golden	115	141*	82*				
ARKANSAS							
Arkansas at Salida	325*	323*	100*				
Arkansas at Pueblo	375*	401*	94*				
Cucharas at La Veta	18	16	112*				
Purgatoire at Trinidad	35	57	61*				
COLORADO							
Colorado nr Granby	200*	199*	100*				
Willow nr Granby	40	43	93				
Frazer at Granby	85	101	85				
Blue abv Green Mt. Res.	275	307	89				
Colorado at Glenwood Spgs.	1400*	1540*	91*				
Roaring Fork at Glenwood	775	777	100				
Plateau Creek at Collbran	55	62	89				
Uncompahgre at Colona	140	170	82				
Surface Cr. nr Cedaredge	15	18	83				
COLORADO							
South Fork at South Fork							
Rio Grande at Del Norte							
Alamosa above Terrace Res.							
Conejos at Mogote							
Culebra at San Luis							
Rio Chama at Park View							
Costilla at Costilla							
Rio Grande at Otowi Bridge							
Rio Grande at San Marcial							
Pecos at Pecos							
COLORADO							
Green at Linwood, Utah							
Little Snake at Lily							
Elk at Clark							
Yampa at Steamboat Spgs.							
White at Meeker							
GREEN RIVER							
South Fork at South Fork	125						
Rio Grande at Del Norte	525*						
Alamosa above Terrace Res.	80						
Conejos at Mogote	220						
Culebra at San Luis	30						
Rio Chama at Park View	240						
Costilla at Costilla	27						
Rio Grande at Otowi Bridge	600*						
Rio Grande at San Marcial	325*						
Pecos at Pecos	30						
RIO GRANDE							
South Fork at South Fork	125						
Rio Grande at Del Norte	525*						
Alamosa above Terrace Res.	80						
Conejos at Mogote	220						
Culebra at San Luis	30						
Rio Chama at Park View	240						
Costilla at Costilla	27						
Rio Grande at Otowi Bridge	600*						
Rio Grande at San Marcial	325*						
Pecos at Pecos	30						
COLORADO							
Green at Linwood, Utah	1100						
Little Snake at Lily	300						
Elk at Clark	215						
Yampa at Steamboat Spgs.	290						
White at Meeker	375						
COLORADO							
South Fork at South Fork	125						
Rio Grande at Del Norte	525*						
Alamosa above Terrace Res.	80						
Conejos at Mogote	220						
Culebra at San Luis	30						
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Conejos at Mogote	220						
Culebra at San Luis	3						

WATER SUPPLY OUTLOOK

CHARTS ON THIS PAGE INDICATE THE MOST PROBABLE WATER SUPPLY AS OF THE DATE OF THIS REPORT. ESTIMATES ASSUME AVERAGE CONDITIONS OF SNOW FALL, PRECIPITATION AND OTHER FACTORS DURING THE SPRING AND EARLY SUMMER MONTHS. AS THE SEASON PROGRESSES ACCURACY OF ESTIMATES IMPROVE. IN ADDITION TO EXPECTED STREAMFLOW, RESERVOIR STORAGE, SOIL MOISTURE IN IRRIGATED AREAS, AND OTHER FACTORS ARE CONSIDERED IN ESTIMATING WATER SUPPLY. ESTIMATES APPLY TO IRRIGATED AREAS ALONG THE MAIN STREAMS AND MAY NOT INDICATE CONDITIONS ON SMALL TRIBUTARIES.



Average



Bar charts show approximate water supply for the past two years and the estimate for this year in percent of 1938-52 average.

WATER SUPPLY OUTLOOK

The bar charts on the opposite page represent graphically the most probable water supply outlook for 1957 as compared to the past two years 1955 and 1956. Streamflow and other factors for 1956 have been partially estimated because full data on water supply conditions are not yet available. Estimates of past conditions and forecasts have been made by the authors of this report. For details on water supply conditions on the Colorado River drainage not shown on this map, reference should be made to State snow reports for Utah and Arizona (See Inside Cover).

YAMPA AND WHITE. The water supply on these streams should be adequate for most needs during the 1957 season. Streamflow should be slightly more than that for 1956.

NORTH PLATTE. Streamflow during 1957 in Colorado and Wyoming should be near average and meet all requirements above Seminoe Reservoir. Because of lack of reservoir storage, water shortages may be expected for some irrigated areas of Eastern Wyoming and Western Nebraska. Of the nearly one-half million acre-feet in storage in Wyoming, only about 100,000 acre-feet are available for the older North Platte project. Should snow fall for the remainder of the season and precipitation next summer be deficient a limited water shortage can be expected. The most probable outlook at this time is considered as fair. Water supply will not be adequate in the Wheatland area served by the Laramie River, but is better than in 1956.

POUDRE TO BOULDER. Natural streamflow in these South Platte tributaries will be less than normal based on present snow accumulation. The chart bar includes water available from the Colorado-Big Thompson project. With this supplemental supply irrigation water should be reasonably adequate, but not plentiful. Opportunities to replenish the depleted reservoir storage will again be limited unless there are good rains over the entire South Platte Watershed during the peak of snow-melt.

UPPER SOUTH PLATTE--CLEAR CREEK. The seasonal snow pack to date is near normal and somewhat less than a year ago. Snow fall after March 1, in 1956, was much below average. Assuming normal snow fall for the remainder of the season, runoff for 1957 should slightly exceed that for 1956. Storage in municipal reservoirs for the City of Denver is the same as that of a year ago and 40 percent of normal.

Water supply on the lower South Platte, particularly between Kersey and Brush will again be short in 1957 unless the snow pack improves substantially before the runoff starts.

UPPER COLORADO. The flow of the Upper Colorado River and its tributaries in 1957 will be similar to that for 1956. Inflow to Granby will most probably be about the same as for last year but the indicated inflow to Green Mountain on the Blue River is somewhat less. Low elevation snow on the watershed is much above average which should wet the soils on irrigated lands. This condition improves the outlook for the irrigated areas along the smaller tributary streams. Water supplies that come directly from the main streams should be adequate.

GUNNISON. The snow pack to date on the Gunnison River Watershed ranges from 110 to nearly 175 percent of normal for this date. Water supplies will be adequate along the main stream with possibly some shortage on the tributaries to the North Fork. The outlook is much better than for 1956. This high snow pack is 35 to 45 percent less than that on March 1, 1952, the most recent heavy runoff year. Taylor Park Reservoir contains 20,000 acre-feet or about one-third of normal. It should fill during the spring melt.

DOLORES. The water supply outlook for the Dolores River is the poorest in Western Colorado. Snow pack is near normal for this date of early season but due to dry soils runoff will be deficient. The flow of the Dolores at Dolores probably will slightly exceed that for 1956. Similar conditions exist on the La Plata. Soil moisture conditions in the irrigated area are good with the snow melt from January storms.

SAN JUAN-ANIMAS. The summer flow of the San Juan should be near normal if average snowfall occurs from now through the snow-melt season. The flow of the Animas, Pine and Piedra Rivers will be near that for the San Juan. Water supply, except for the smaller tributaries, should be adequate in 1957.

ARKANSAS. Snow cover on the mountains of the Upper Arkansas is above normal for this date. It is particularly heavy at Monarch Pass and along the Sangre de Cristo mountains into New Mexico. Although streamflow will probably be better than in 1956, it will probably not exceed the 1938-52 average. Unless substantial rains occur during the summer months, it is expected that the flow of the Arkansas River below Pueblo will be substantially less than average. In view of dry soils in irrigated areas and lack of water in storage, water shortage is again expected. It should not be as severe as in 1956.

RIO GRANDE (San Luis Valley). February was an extremely dry and warm month over the Rio Grande drainage. The flow of the Rio Grande and its tributaries is still expected to be near normal for 1957. With limited snow fall during the past month snow pack is near normal at low elevations and up to 150 percent of normal at high elevations. The outlook for both the east and west side of the valley is definitely the best for the past four years even if a lot of snow melt will be used to replace deficits of soil moisture and groundwater. Substantially less pumping should be required.

MIDDLE RIO GRANDE (New Mexico). The deficiency in snow fall during February has adversely affected the outlook for flow of the Rio Grande through New Mexico. Considerable snow melt has occurred with the total snow pack less than normal for this date. The snow fall during March, April and May, will have to be much above average to improve the outlook materially. The flow of the Rio Grande to Otowi Bridge is now expected to be in the range of 60 to 70 percent of normal.

LOWER RIO GRANDE. Inflow to Elephant Butte will exceed that for any of the past four years, but total inflow and storage will probably provide less than half of the historical water use along the river in Southern New Mexico and Western Texas. A continued high groundwater use will be necessary. The flow of the river is expected to drop in percent of normal along its course.

SNOW COURSE MEASUREMENTS

March 1, 1957

SNOW COURSE	Snow Depth	Water Content	Years	SNOW COURSE	Snow Depth	Water Content	Years				
	1957	In Inches	of		1957	In Inches	of				
	In Inches	1957	1956		In Inches	1957	1956				
**				**							
PLATTE RIVER DRAINAGE				PLATTE RIVER DRAINAGE							
SWEETWATER RIVER											
Grannier Meadows (w)	45	10.7	16.6	11.5	20	CLEAR CREEK					
South Pass* (w)	42	10.8	18.3	11.5	17	Loveland Pass	49	13.9	19.3	11.8	20
Larsen Creek (w)	--	--	NS	--	8	Grizzly Peak*	56	15.5	23.0	15.2	15
NO. PLATTE RIVER											
Cameron Pass	54	19.0	24.2	16.7	20	Empire	34	7.4	9.9	6.5	8
Park View	39	9.3	9.7	7.7	21	Berthoud Falls	51	12.9	17.2	--	6
Columbine Lodge	71	23.9	27.4	18.4	21	Clear Creek	48	13.1	21.0	--	5
Willow Cr. Pass*	49	13.2	13.6	10.4	19	SOUTH PLATTE RIVER					
Northgate	31	7.3	7.5	--	7	Hoosier Pass	43	11.9	14.4	9.3	20
Bottle Creek (w)	51	16.2	15.6	11.4	19	Jefferson Cr.	36	9.0	10.0	6.9	17
Webber Spring (w)	59	19.5	19.2	14.9	19	Geneva Park	15	34.0	4.0	--	7
Old Battle (w)	90	33.2	32.6	25.5	20	ARKANSAS RIVER DRAINAGE					
N. French Creek (w)	80	27.9	29.2	23.3	19	ARKANSAS RIVER					
N. Barrett Creek (w)	61	17.8	19.6	15.0	20	Tennessee Pass	41	10.1	12.4	7.5	21
Ryan Park (w)	48	11.7	13.0	8.8	20	Twin Lakes T.	45	12.1	8.7	8.9	19
Spring Creek (w)		15.6	--	7	La Veta Pass*	38	13.9	8.4	8.3	19	
Albany (w)	43	13.5	16.6	8	4 Mile Park	27	6.2	4.2	3.5	18	
LaBonte (w)	21	4.9	4.5	8	Fremont Pass	53	14.3	18.2	12.9	21	
Boxelder (w)	20	5.2	3.6	--	Blue Lakes	NS	NS	NS	--		
LARAMIE RIVER											
Roach (a)	57	16.8	22.7	15.1	16	Monarch Pass	63	21.2	18.7	14.5	14
Deadman Hill* (a)	36	12.0	17.8	11.4	20	Saint Elmo (a)	45	13.5	12.2	--	7
McIntyre	50	12.4	NS	--	Timberline	76	23.0	NS	--	6	
Brooklyn Lake (w)	66	23.4	26.2	17.9	20	East Fork	37	9.7	12.0	--	4
Fox Park (w)	31	7.4	8.5	7.2	20	Westcliffe	33	9.6	6.6	--	4
Pole Mtn. * (w)	22	6.0	6.3	7.2	20	Bourbon	32	8.8	7.1	--	
Libby Lodge (w)	34	10.2	12.1	8.3	19	COLORADO RIVER DRAINAGE					
Hairpin Turn (w)	38	11.5	13.8	9.2	19	COLORADO RIVER (Above Glenwood Springs)					
Albany (w)	43	13.5	16.6	8	Cameron Pass* (a)	54	19.0	24.2	16.7	20	
POUDRE RIVER					Phantom Valley	33	8.5	12.9	8.9	21	
Cameron Pass (a)	54	19.0	24.2	16.7	20	Hoosier Pass*	43	11.9	14.4	9.3	20
Chambers Lake	34	8.5	1.3	7.2	Berthoud Pass	52	14.5	16.3	12.3	21	
Big South	11	2.1	4.1	2.1	Tennessee Pass	41	10.1	12.4	7.5	21	
Deadman Hill (a)	36	12.0	17.8	11.4	M. Fork Camp Gr.	38	10.1	10.1	8.2	21	
Lake Irene*	60	17.8	27.1	17.8	Fiddler Gulch	53	15.0	19.4	12.9	20	
Hour Glass Lake	29	6.0	9.6	6.0	Lulu	55	15.7	21.8	14.2	19	
Red Feather	25	8.3	8.6	--	Willow Creek P.	49	13.2	13.6	10.4	19	
Lost Lake	46	13.6	15.2	--	N. Inlet Grand L.	35	9.4	11.4	7.8	18	
BIG THOMPSON RIVER					Lake Irene	60	17.8	27.1	17.8	19	
Lake Irene*	60	17.8	27.1	17.8	Arrow	46	12.0	12.9	8.1	19	
Hidden Valley	40	8.1	13.2	9.4	Lapland	49	12.7	12.5	9.9	17	
Deer Ridge	27	5.6	6.9	5.1	Fremont Pass	53	14.3	18.2	12.9	21	
Longs Peak	42	11.5	14.1	--	Lynx Pass	48	13.2	15.8	10.5	21	
Two-Mile	48	11.1	19.0	--	Shrine Pass	57	16.4	21.5	13.9	15	
ST. VRAIN RIVER					Grizzly Peak	56	15.5	23.0	15.2	15	
Wild Basin	46	12.2	16.8	11.1	Glen-Mar Ranch	36	9.0	9.1	8.2	10	
Copeland Lake	22	5.1	6.8	5.1	Monarch Lake	39	12.0	15.5	13.0	9	
Ward	21	6.4	7.2	--	Granby	34	8.0	10.1	6.3	8	
BOULDER CREEK					Grand Lake	33	8.4	11.8	8.0	8	
University Camp	56	18.1	19.8	16.7	Berthoud Summit	61	16.7	19.1	--	6	
Moffat	39	9.6	13.8	--	Frazer View	44	11.2	13.8	--	6	
Boulder Falls	33	9.0	NS	--	Gore Pass	40	11.8	13.2	--	6	
NS No Survey					Frisco	33	9.0	10.8	--	6	
(a) Air observed					Snake River	34	8.5	12.1	--	6	
(w) Wyoming					Summit Ranch	NS	NS	NS	--	--	
* On adjacent drainage					Vail Pass	61	18.6	25.0	--	4	
** Courses with less than 15 years record in period 1938-52 have all years prior to 1953 averaged.					Pando	33	10.5	12.1	--	4	
					Kokomo	44	12.1	16.2	--	4	
					Milner	37	10.0	17.9	--	5	
					Blue River	38	8.8	NS	--	--	
					Jones Pass	49	13.4	NS	--	--	
					Ranch Creek	39	10.5	NS	--	--	
					Vasquez Creek	44	11.9	NS	--	--	

* On adjacent drainage

** Courses with less than 15 years record in period 1938-52 have all years prior to 1953 averaged.

NS No Survey

(a) Air observed

(w) Wyoming

SNOW COURSE MEASUREMENTS

March 1, 1957

SNOW COURSE	Snow Depth Water Content			Years of Record	SNOW COURSE	Snow Depth Water Content			Years of Record		
	1957		In Inches			1957		In Inches			
	In Inches	1957	1956	Avg.		1956	Avg.	1957	1956		
**					**						
COLORADO RIVER DRAINAGE					COLORADO RIVER DRAINAGE						
ROARING FORK											
Ind. Pass Tunnel	65	20.5	17.5	13.8	21	Rico	32	11.1	9.1	7.0	17
North Lost Trail	55	18.1	17.4	11.1	21	Telluride	34	7.0	8.0	7.3	18
Nast	35	9.0	8.3	6.0	12	Lizard Head	62	15.0	15.0	12.8	15
Ivanhoe	59	18.8	24.0	16.5	7	Trout Lake	54	12.5	13.5	11.7	8
Lift	69	21.8	--	--	--						
YAMPA RIVER											
Dry Lake (a)	73	23.2	26.0	16.3	18	SAN RAFAEL RIVER (UTAH)					
Columbine Lodge*	71	23.9	27.4	18.4	21	Hntngtn-Horseshoe	60	20.5	19.1	24.9	7
Elk River(a)	60	19.7	19.5	14.1	18	Seeley Creek R. S.	39	12.2	13.7	25.8	5
Lynx Pass*	48	13.2	15.8	10.5	21						
Routt Line	95	32.1	34.6	--	6	VIRGIN RIVER (UTAH)					
Rabbit Ears	95	31.3	32.2	--	6	Long Valley Jnct.	0	0.0	0	7.0	8
Yampa View	56	16.7	16.3	--	6	Harris Flat R. S.	18	7.6	4.5	11.0	14
Flat Top	NS	NS	NS	--	--	Duck Creek R. S.	40	14.6	13.2	15.1	13
Bear River	NS	NS	NS	--	--	Cedar Breaks	44	14.2	20.6	19.6	11
Clark	48	15.3	17.5	--	1	Webster Flats	42	14.0	13.7	15.5	7
Old Battle	90	33.2	32.6	25.5	20						
WHITE RIVER											
Burro Mountain (a)	59	18.0	18.2	14.4	21	COLORADO R. (S. E. UTAH)					
Rio Blanco	57	20.3	18.7	12.8	18	LaSal Mt.	34	9.9	8.8	16.0	5
PLATEAU CREEK											
Mesa Lakes	64	17.2	15.2	12.9	20	Buckboard Flat	40	12.5	11.8	--	1
Trickle Divide(a)	89	25.9	22.5	22.4	17						
GUNNISON RIVER											
Crested Butte	66	19.3	15.6	12.0	21	PRICE RIVER (UTAH)					
Park Cone	53	14.4	11.9	8.4	20	Indian Canyon*	32	8.4	12.3	9.0	19
Alexander Lake(a)	71	19.2	18.6	17.9	20	Gooseberry Res.	54	17.0	18.7	20.0	12
Ironton Park	46	13.5	15.2	11.1	20	Staley Ranch	28	8.8	8.0	7.3	16
Trickle Divide(a)	89	25.9	22.5	22.4	17	Dry Valley Divide	34	9.8	12.3	10.2	16
Park Reservoir(a)	77	23.2	21.3	21.1	17	Hntngtn-Horseshoe	60	20.5	19.1	25.9	7
Porphyry Creek	62	20.0	15.4	13.5	16	Mud Creek	48	15.8	22.4	19.8	7
Kannah Cr.	NS	NS	NS	--	--						
Lake City	40	13.3	7.5	7.0	8	DUCHESSNE RIVER (UTAH)					
Spring Cr. Pass*	36	9.0	6.2	--	6	Lake Fork Mt.	38	8.2	14.9	11.6	6
Cochetopa Pass*	28	5.6	5.2	4.5	8	Paradise Park	37	8.3	15.9	14.6	6
McClure Pass	64	21.0	18.4	--	7	Mosby Mt. (L)	31	6.9	11.6	12.0	7
Red Mt. Pass	91	25.2	27.3	--	5	Brown Duck Lake	NS	NS	NS	NS	--
Blue Mesa	NS	NS	--	--	--	Indian Canyon	32	8.4	12.3	9.0	19
SAN JUAN RIVER											
Wolf Creek Pass*	100	36.4	32.3	24.3	20	UPPER GREEN RIVER (UTAH)					
Upper San Juan	110	37.7	30.9	27.0	19	Hewinta R. S.	NS	NS	NS	NS	--
Granite Peaks	28	9.6	8.5	7.4	16	Hole-in-Rock	NS	NS	NS	NS	--
La Plata	NS	NS	NS	--	King's Cabin (U)	32	7.4	9.6	11.1	8	
Wolf Creek Summit	102	33.1	30.2	--	King's Cabin (L)	27	6.6	9.6	11.1	8	
Chama Divide*	12	4.3	5.3	5.2	17						
Chamita*	37	13.7	10.8	10.0	16	GREEN RIVER (WYOMING)					
ANIMAS RIVER											
Ironton Park*	46	13.5	15.2	11.1	20	Dutch Joe	34	8.3	--	--	1
Cascade	51	16.5	16.2	10.9	18	Mulligan Park	35	9.7	11.6	9.9	15
Spud Mt.	94	30.7	25.0	--	6	Kendall R. S.	--	--	11.9	10.4	15
Molas Lake	54	19.4	16.9	--	6	Loomis Park	53	15.8	20.8	15.2	15
Howardville	46	12.5	10.4	--	6	Snyder Basin R. S.	46	13.8	--	--	1
Mineral Creek	56	15.6	15.1	--	6	Piney-LaBarge	53	16.0	--	--	1
Red Mt. Pass*	91	25.2	27.3	--	6						
GILA RIVER (ARIZONA)											
Frisco Divide	0	0.0	3.0	2.0	20						
State Line	0	0.0	3.7	2.8	20						
Taylor Creek	0	0.0	0.0	0.5	16						
Inman	0	0.0	0.0	0.7	12						
Nutrioso	0	0.0	2.4	2.2	20						
Beaver Head	0	0.0	3.1	3.4	20						
Coronado Trail	0	0.0	2.9	3.5	20						
Rose Canyon	0	0.0	1.2	0.5	10						
Bear Wallow	0	0.0	3.6	2.3	10						

* On adjacent drainage

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NS No Survey

(a) Air observed

SNOW COURSE MEASUREMENTS

March 1, 1957

SNOW COURSE	Snow Depth		Water Content		Years of Record	SNOW COURSE	Snow Depth		Water Content		Years of Record		
	In Inches	1957	In Inches	1957			In Inches	1957	In Inches	1956			
COLORADO RIVER DRAINAGE						RIO GRANDE DRAINAGE							
SALT RIVER (ARIZONA)						RIO GRANDE IN COLORADO							
Forest Dale	0	0	0.8	1.3	18	Pyramid	36	8.4	7.7	--	6		
McNary	0	0	3.6	2.9	18	Spring Creek Pass	36	9.0	6.2	--	6		
Nutrioso	0	0	2.4	2.2	19	Pool Table	22	6.1	3.0	4.6	8		
Coronado Trail	0	0	2.9	3.5	19	L. Humphreys	28	7.8	4.3	5.8	8		
Milk Ranch	0	0	1.9	0.9	16	Cochetopa Pass	28	5.6	5.2	4.5	8		
Workman Creek	0	0	3.4	0.0	5	Red Mt. Pass	91	25.2	27.3	--	6		
Maverick Fork	18	7.4	9.7	10.9	7	Porcupine	41	11.	6.9	--	6		
Baldy	9	3.6	6.1	7.0	7	Wolf Creek Summit	102	33.1	30.2	--	6		
Fort Apache	16	5.0	8.1	6.7	7	Hiway	93	32.8	27.7	--	--		
Pacheta	0	0	4.9	3.0	7	Pass Creek	49	17.3	13.8	--	--		
VERDE RIVER (ARIZONA)						ALAMOSA RIVER							
Iron Springs*	0	0	0.0	2.0	11	Silver Lakes	29	9.1	8.9	5.9	20		
Camp Wood	0	0	0.0	1.2	11	Summitville	67	22.0	19.4	16.2	16		
Mingus Mountain	0	0	0.0	1.9	10	CONEJOS RIVER							
Mormon Lake*	T	T	2.7	7.0	10	River Springs	33	11.1	8.1	7.2	20		
Fort Valley*	0	0	1.0	3.2	10	Cumbres Pass(a)	54	20.1	18.1	20.8	20		
Chalende	0	0	0.6	3.7	10	Platoro	63	21.0	14.2	--	7		
Munds Park	0	0	0.0	1.1	7	West Conejos	40	14.3	10.3	9.6	8		
Casner Park	0	0	2.1	4.4	6	La Manga	76	24.7	20.6	20.5	8		
Mormon Mt.	8	3.6	4.6	6.0	7	SANGRE DE CRISTO RANGE (COLORADO)							
Happy Jack	0	0	3.7	4.2	6	LaVeta Pass	38	13.9	8.4	8.3	19		
LITTLE COLORADO RIVER (ARIZONA)						Culebra	38	9.5	6.4	9.8	17		
Forest Dale	0	0	0.8	1.3	18	CHAMA RIVER							
McNary	0	0	3.6	2.9	18	Cumbres Pass(a)	54	20.1	18.1	20.8	20		
Nutrioso	0	0	2.4	2.2	19	Payrole (a)	25	9.5	11.2	9.2	16		
Mormon Lake	T	T	2.7	7.0	10	Chama Divide	12	4.3	5.3	5.2	17		
Fort Valley	0	0	1.0	3.2	10	Chamita	37	13.7	10.8	10.0	16		
Mormon Mt.	8	3.6	4.6	6.0	7	Bateman	43	11.7	10.7	--	7		
Happy Jack	0	0	3.7	4.2	6	PECOS RIVER							
Gentry	0	0	3.3	1.0	7	Panchuela	0	0.0	1.8	3.5	20		
Heber	T	T	3.1	1.3	7	Big Tesuque	8	2.7	3.0	5.6	15		
Canyon Creek	T	T	3.3	1.6	7	Rio En Medio*	23	7.6	6.6	--	7		
WILLIAMS RIVER (ARIZONA)						RIO GRANDE IN NEW MEXICO							
Iron Springs	0	0	0.0	2.0	11	Red River	27	9.7	4.0	7.8	19		
Camp Wood*	0	0	0.0	1.2	11	Taos Canyon	16	6.3	4.5	5.6	19		
Willow Ranch	0	0	8.0	0.3	11	Aspen Grove	17	4.3	3.7	4.6	20		
LOWER COLORADO RIVER (ARIZONA)						Hematite Park*	10	3.2	2.5	5.1	19		
Bright Angel	31	13.4	7.1	10.6	10	Tres Ritos	16	4.8	4.2	6.0	19		
Grand Canyon	0	0	1.2	2.7	10	Payrole(a)	25	9.5	11.2	9.2	16		
Fort Valley	0	0	1.0	3.2	10	Cordova(a)	39	11.8	6.9	9.9	15		
Chalender	0	0	0.6	3.7	10	Big Tesuque	8	2.7	3.0	5.6	15		
RIO GRANDE DRAINAGE						Elk Cabin	--	--	3.9	3.1	9		
RIO GRANDE IN COLORADO						Rio En Medio	23	7.6	6.6	--	7		
Wolf Creek Pass	100	36.4	32.3	24.3	20	Quemazon	30	7.1	6.0	--	7		
Upper Rio Grande	28	6.4	5.8	6.9	19	Fenton Hill	10	2.2	5.4	--	4		
Santa Maria	22	8.4	8.9	5.9	20	CANADIAN RIVER							
Ft. Garland	13	2.9	0.0	2.9	15	Hematite Park	10	3.2	2.5	5.1	19		
RIO GRANDE IN NEW MEXICO						Tres Ritos	16	4.8	4.2	6.0	19		
Wolf Creek Pass	100	36.4	32.3	24.3	20	Cordova (a)	39	11.8	6.9	9.9	15		
Upper Rio Grande	28	6.4	5.8	6.9	19								
Santa Maria	22	8.4	8.9	5.9	20								
Ft. Garland	13	2.9	0.0	2.9	15								

* On adjacent drainage

** Courses with less than 15 years record in period 1938-52 have all years prior to 1953 averaged.

NS No Survey

(a) Air observed

STATUS OF RESERVOIR STORAGE

March 1, 1957

*Shorter Period

VALLEY PRECIPITATION^{1/}

Division Averages and Departures^{3/}

DRAINAGE DIVISIONS	Fall			Winter	
	Sept.-Oct.	-Nov.	Dec.-Jan.	Avg.	Dept. 2/
North Platte River, Wyo.	2.16	-1.72	1.50	+	.06
South Platte River	2.98	-1.39	1.25	+	.19
Arkansas River	3.52	-2.42	1.68	+	.45
Colorado River	3.18	-2.81	5.11	+	.29
Green River, Wyo.	1.55	-1.43	1.17	+	.14
San Juan River, N.M.	1.73	-2.44	4.54	+	.27
Colorado River, Ariz	2.42	-2.48	3.43	+	.92
Gila River, Arizona	.65	-1.98	1.62	+	.06
Canadian River, N.M.	2.28	-4.49	1.13	-	.02
Rio Grande, Colorado	2.05	-2.26	1.60	+	.55
Rio Grande (N), N.M.	2.27	-4.02	2.97	+	.87
Rio Grande (S), N.M.	1.80	-2.72	.47	-	.51
Pecos River, N.M.	2.72	-4.12	1.39	+	.07

1/ Preliminary analysis by U. S. Weather Bureau from data furnished by Meteorological Service & U. S. Weather Bureau

2/ Departure from average

3/ Selected Stations

SOIL MOISTURE MEASUREMENTS

STATION	Percent Available Soil Moisture on November 1, 1956		
	1956	1955	1954
NORTH PLATTE			
Columbine Lodge	0	8	51
Willow Creek	32	51	69
SOUTH PLATTE			
Red Feather	7	21	16
Chambers Lake	15	26	62
Deer Ridge	13	19	31
Hidden Valley	34	50	92
Longs Peak	7	17	25
University Camp	11	13	19
Berthoud Falls	0	33	49
ARKANSAS			
Leadville	34	37	20
UPPER COLORADO			
Vail Pass	6	18	50
ROARING FORK			
Placita	20	10	--
Maroon	8	20	35
RIO GRANDE (Colorado)			
Bristol View	2	4	48
Wolf Creek Pass	4	30	61
River Springs	34	5	8
RIO GRANDE (N. M.)			
Red River*	9	31	--
Tres Ritos*	34	42	--
Tres Piedras*	93	12	48

*March 1, 1957, 1956, 1955 respectively

Federal - State - Private
COOPERATIVE SNOW SURVEYS

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Furnishes the basic data
necessary for forecasting
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domestic and municipal water
supply, hydro-electric power
generation, navigation,
mining and industry

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“WATER IS THE WEST'S GREATEST RESOURCE”